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EXAMINER	
DAVIS, MINH TAM B	

ART UNIT	PAPER NUMBER
1642	

DATE MAILED: 07/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/445,223	WALLACH ET AL.	
	Examiner	Art Unit	
	MINH-TAM DAVIS	1642	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 May 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *5-8,11,23,24,44-48,51 and 54-57* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *5-8,11,23,24,44,46-48,51 and 54-57* is/are rejected.

7)☒ Claim(s) *45* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Applicant cancels claims 52-53 and adds new claims 55-57, which are related to claims 5-8, 11, 23-24, 44-48, 51, 54.

Accordingly, claims 5-8, 11, 23-24, 44-48, 51, 54-57 are being examined.

The following are the remaining rejections.

OBJECTION

Claim 45 appears to be free of prior art but are objected to as being dependent upon a rejected base claim, claim 44, but would be allowable if rewritten in independent forms.

REJECITON UNDER 35 USC 101, NEW REJECTION

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 8, 11 are rejected under 35 USC 101 because the claim is directed to non-statutory subject matter.

The host cell as claimed has the same characteristics and utility as a host cell found naturally and therefore does not constitute patentable subject matter.

In the absence of the hand of man, the naturally occurring polypeptide is considered non-statutory subject matter. Diamond v. Chakrabarty, 206 USPQ 193 (1980). Amendment of the claims to recite " an isolated transformed host cell" is suggested to overcome this rejection.

REJECTION UNDER 35 USC 112, SECOND PARAGRAPH, NEW REJECTION

Claims 24, 56-57 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 24, 56-57 are indefinite for the use of the language "sufficient length" in claims 24, 56-57.

"Sufficient length" is not defined by the claims, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention and would not be able to determine the metes and bounds of the claims.

REJECTION UNDER 35 USC 112, FIRST PARAGRAPH, NEW MATTER, NEW REJECTION

Claims 24, 51, 56-57 are rejected under 35 USC 112, first paragraph, as the specification does not contain a written description of the claimed invention.

The limitation of "an antisense sequence of sufficient length to effectively block the expression of the polypeptide of SEQ ID NO:1 upon use", claimed in Claims 24, 51, 56-57, has no clear support in the specification and the claims as originally filed.

A review of the specification discloses support for a fragment of the claimed DNA sequence (p.11, lines 17-31), and primers for PCR (p.30). There is however no mention of "an antisense sequence of sufficient length to effectively block the expression of the polypeptide of SEQ ID NO:1 upon use".

The subject matter claimed in claims broadens the scope of the invention as originally disclosed in the specification.

REJECTION UNDER 35 USC 112, FIRST PARAGRAPH, WRITTEN DESCRIPTION, NEW REJECTION

The instant specification does not contain a written description of the invention in such full, clear, concise, and exact terms or in sufficient detail that one skilled in the art can reasonably conclude that applicant had possession of the claimed invention at the time of filing.

Claims 5-8, 11, 23-24, 44, 46-48, 51, 54-57 are rejected under 35 USC 112, first paragraph, as lacking an adequate written description in the specification.

Claims 5-8, 11, 23-24, 44, 46-48, 51, 54-57 are drawn to:

1) An isolated oligonucleotide or a composition comprising said oligonucleotide consisting of an antisense sequence of at least part of a DNA sequence or a mRNA sequence encoding the polypeptide of SEQ ID NO:1, said part of the DNA sequence or mRNA sequence being of "sufficient length" to effectively block the expression of said polypeptide upon use (Claims 24, 51, 56-57).

2) An isolated DNA sequence "consisting essentially of" a sequence encoding a polypeptide comprising an "analog" of SEQ ID NO:1, having no more than ten changes in the amino acid sequence of SEQ ID NO:1, each said change being a substitution, deletion or insertion of a single amino acid, "which analog potentiates cell death", a vector, a transformed host cell containing said DNA sequence, and a method for producing a polypeptide which potentiates cell death (claims 5-8, 11, 44, 46, 54, 55).

3) An isolated DNA sequence "consisting essentially of" a sequence encoding "a fragment of SEQ ID NO:1, which fragment potentiates cell death", or "consisting essentially of" a portion of SEQ ID NO:2 encoding a polypeptide which potentiates cell death (claims 44, 47, 48).

It is noted that "consisting essentially of" is reasonably interpreted as the same as the open language "comprising".

It is further noted that the specification does not disclose the length of, nor the structure of the antisense of the part of SEQ ID NO:2, wherein said length is sufficient for the claimed antisense to effectively block the expression of SEQ ID NO:1 upon use *in vivo*.

In addition, the specification does not disclose which fragment or which analog of SEQ ID NO:1 potentiates cell death for the following reasons:

The specification discloses that SEQ ID NO:1 by itself does not induces cell death, but could enhance the level of cell death induced by FAS-R, p55 TNF-R or RIP (p.57, second paragraph).

The specification discloses the CARD domain of SEQ ID NO:1, which is responsible for binding of SEQ ID NO:1 to BCL-2, an inhibitor of apoptosis (p.53, second paragraph, p.56, item (i)). The specification speculates that SEQ ID NO:1 may serve as inhibitor of BCL2 activity by binding to BCL2, similar to BAD protein which inhibits BCL2 by binding to BCL2 (p.57, second paragraph), which in turn protects cells from cell death induced by FAS-R, p55 TNF-R or RIP. However, binding to a protein via a CARD domain is common for proteins involved in apoptosis pathway, and would not necessarily inhibit the function of said protein. For example, binding of Apaf-1 CARD domain to caspase-9 results in activation, and not inhibition, of caspase-9 (Shiozaki E N et al, 2002, Proceed Natl Acad Sci, USA, 99 (7): 4197-4202). On the other hand, not all CARD-containing polypeptides would induce apoptosis. For example, the CARD domain of the CARD-containing RAIDD polypeptide does not induce apoptosis upon overexpression (Shaerwin-Whyatt LM et al, 2000, Cell Death and Differentiation, 7: 155-165, especially page 162, first column). Moreover, for BAD polypeptide to inhibit the death repressor activity of BCL2, BAD polypeptide has to heterodimerize with BCL2 via its BH3 binding domain with such an affinity sufficient to displace the binding of BAX, a death promoter, to BCL2 (Ottilie S et al, 1997, JBC, 272 (49): 30866-30872). There is no indication however that the polypeptide of SEQ ID NO:1 could heterodimerize with BCL2 and/or with sufficient affinity to inhibit the death protection activity of BCL2.

In addition, it is not clear whether the pathway of Bcl2 has any connection with FAS-R, p55 TNF-R or RIP, and could protect cells from cell death induced by FAS-R, p55 TNF-R or RIP.

Thus one cannot predict that binding alone by the CARD domain of SEQ ID NO:1 to BCL2 would be sufficient to inhibit BCL2 activity, and consequently, **one cannot predict nor determine that the CARD domain of SEQ ID NO:1 is responsible for potentiation of cell death induced by FAS-R, p55 TNF-R or RIP.**

The specification also discloses a kinase domain of SEQ ID NO:1. The specification speculates that this kinase could phosphorylate BCL2 and somehow reduces BCL2 activity toward protecting cells against apoptosis (p.53, second paragraph, p.57, lines 15-18). The specification speculates that this kinase could also interact with other proteins, such as NIK or TRAF2 in such as way as to lead to reduced NF-kB activation, and ultimately reduced cell survival and increased cell death (p.57, lines 19-24).

It is noted however the actual substrate of the kinase from SEQ ID NO:1 is not determined, and one cannot predict which protein is the actual substrate of the kinase from SEQ ID NO:1, and whether the kinase action of SEQ ID NO:1 would lead to inhibition of BCL2 or decrease in NF-kB activation, resulting in potentating cell death induced by FAS-R, p55 TNF-R or RIP. Further, even if the kinase domain of SEQ ID NO:1 phosphorylates BCL2, there is no indication that phosphorylation of BCL2 would result in inhibition of BCL2 activity, nor inhibition

of the protection by BCL2 of cells from cell death induced by FAS-R, p55 TNF-R or RIP.

In other words, **one cannot predict nor determine that the kinase domain of SEQ ID NO:1 is responsible for potentiating cell death induced by FAS-R, p55 TNF-R or RIP.**

Further, it is noted that on the contrary, the specification discloses that SEQ ID NO:1 can induce NF-kB activation, and that since SEQ ID NO:1 must also induce NF-kB, this activation appears to be independent of the kinase domain of SEQ ID NO:1 (p.59, lines 21-24).

In view of the above, **one would reasonably conclude that the specification does not disclose which fragment of SEQ ID NO:1 potentiates cell death, nor which analog of SEQ ID NO:1 potentiates cell death**. There is no disclosure of which amino acids could be substituted, deleted or inserted, such that the function of potentiating cell death of SEQ ID NO:1 is maintained.

Further, there is no disclosure of a correlation between structure and the function of potentiating cell death.

Although drawn to DNA arts, the findings in University of California v. Eli Lilly and Co., 119 F.3d 1559, 43 USPQ2d 1398 (Fed. Cir. 1997) and Enzo Biochem, Inc. V. Gen-Probe Inc. are relevant to the instant claims. The Federal Circuit addressed the application of the written description requirement to DNA-related inventions in University of California v. Eli Lilly and Co., 119 F.3d 1559, 43 USPQ2d 1398 (Fed. Cir. 1997). The court stated that □[a] written description of an invention involving a chemical genus, like a description of a chemical

species, □requires a precise definition, such as by structure, formula, [or] chemical name,□ of the claimed subject matter sufficient to distinguish it from other materials.□ Id. At 1567, 43 USPQ2d at 1405. The court also stated that

> a generic statement such as □vertebrate insulin cDNA□ or □mammalian insulin cDNA□ without more, is not an adequate written description of the genus because it does not distinguish the genus from others, except by function. It does not specifically define any of the genes that fall within its definition. It does not define any structural features commonly possessed by members of the genus that distinguish them from others. One skilled in the art therefore cannot, as one can do with a fully described genus, visualize or recognize the identity of the members of the genus. A definition by function, as we have previously indicated, does not suffice to define the genus because it is only an indication of what the gene does, rather than what it is.

Id. At 1568, 43 USPQ2d at 1406. The court concluded that "naming a type of material generally known to exist, in the absence of knowledge as to what that material consists of, is not a description of that material." Id.

Finally, the court addressed the manner by which a genus of cDNAs might be described. "A description of a genus of cDNAs may be achieved by means of a recitation of a representative number of cDNAs, defined by nucleotide sequence, falling within the scope of the genus or of a recitation of structural

features common to the members of the genus, which features constitute a substantial portion of the genus." Id.

The Federal Circuit has recently clarified that a DNA molecule can be adequately described without disclosing its complete structure. See Enzo Biochem, Inc. V. Gen-Probe Inc., 296 F.3d 1316, 63 USPQ2d 1609 (Fed. Cir. 2002). The Enzo court adopted the standard that "the written description requirement can be met by □show[ing] that an invention is complete by disclosure of sufficiently detailed, relevant identifying characteristics ....i.e., complete or partial structure, other physical and/or chemical properties, functional characteristics when coupled with a known or disclosed correlation between function and structure, or some combination of such characteristics. " Id. At 1324, 63 USPQ2d at 1613 (emphasis omitted, bracketed material in original).

The inventions at issue in Lilly and Enzo were DNA constructs per se, the holdings of those cases are also applicable to claims such as those at issue here. A disclosure that does not adequately describe a product itself logically cannot adequately describe a method of using that product.

Thus, the instant specification may provide an adequate written description of an antisense sequence of sufficient length to effectively block the expression of SEQ ID NO:1, or a DNA sequence consisting essentially of a sequence encoding a polypeptide comprising an analog of SEQ ID NO:1, or encoding a fragment of SEQ ID NO:1, which analog or fragment potentiates cell death, as per test shown in the example of Lilly by structurally describing a representative number of an antisense sequence of sufficient length to effectively

block the expression of SEQ ID NO:1, or a DNA sequence consisting essentially of a sequence encoding a polypeptide comprising an analog of SEQ ID NO:1, or encoding a fragment of SEQ ID NO:1, which analog or fragment potentiates cell death, or by describing "structural features common to the members of the genus, which features constitute a substantial portion of the genus." Alternatively, as shown in the example of Enzo, the specification can show that the claimed invention is complete "by disclosure of sufficiently detailed, relevant identifying characteristics, functional characteristics when coupled with a known or disclosed correlation between function and structure, or some combination of such characteristics."

In this case, the specification does not describe an antisense sequence of sufficient length to effectively block the expression of SEQ ID NO:1, or a DNA sequence consisting essentially of a sequence encoding a polypeptide comprising an analog of SEQ ID NO:1, or encoding a fragment of SEQ ID NO:1, which analog or fragment potentiates cell death, in a manner that satisfies either the standards as shown in the example of Lilly or Enzo. The specification does not provide the complete structure of any antisense sequence of sufficient length to effectively block the expression of SEQ ID NO:1, or any DNA sequence consisting essentially of a sequence encoding a polypeptide comprising an analog of SEQ ID NO:1, or encoding a fragment of SEQ ID NO:1, which analog or fragment potentiates cell death, other than SEQ ID NO:2, nor any functional characteristics coupled with a known or disclosed correlation between structure and function. Although the specification discloses a single polynucleotide of SEQ

ID NO:2, this does not provide a description of an antisense sequence of sufficient length to effectively block the expression of SEQ ID NO:1, or a DNA sequence consisting essentially of a sequence encoding a polypeptide comprising an analog of SEQ ID NO:1, or encoding a fragment of SEQ ID NO:1, which analog or fragment potentiates cell death, that would satisfy the standard as shown in the example of Enzo.

The specification also fails to describe an antisense sequence of sufficient length to effectively block the expression of SEQ ID NO:1, or a DNA sequence consisting essentially of a sequence encoding a polypeptide comprising an analog of SEQ ID NO:1, or encoding a fragment of SEQ ID NO:1, which analog or fragment potentiates cell death, by the example in Lilly. The specification describes only a single polynucleotide of SEQ ID NO:2. Therefore, it necessarily fails to describe a "representative number" of such species. In addition, the specification also does not describe "structural features common to the members of the genus, which features constitute a substantial portion of the genus."

Thus, the specification does not provide an adequate written description of an antisense sequence of sufficient length to effectively block the expression of SEQ ID NO:1, or a DNA sequence consisting essentially of a sequence encoding a polypeptide comprising an analog of SEQ ID NO:1, or encoding a fragment of SEQ ID NO:1, which analog or fragment potentiates cell death, that is required to practice the claimed invention.

Further, since the specification fails to adequately describe the product for use in the claimed method of claim 11, it also fails to adequately describe the claimed method of claim 11.

REJECTION UNDER 35 USC 112, FIRST PARAGRAPH, SCOPE

1) Claims 5-8, 11, 23-24, 44, 46-48, 51, 54-57 remain rejected under 35 USC 112, first paragraph, because while being enable for the polynucleotide of SEQ ID NO:2, or polynucleotides encoding SEQ ID NO:1, **the specification lacks enablement for a DNA sequence consisting essentially of a sequence encoding a polypeptide "analog or fragment of SEQ ID NO:1, which analog or fragment potentiates cell death",** for reasons already of record in paper of 12/02/04, wherein the reasons for rejection in which paper are incorporated by reference here as well.

Applicant argues that the Examiner's position that one would not know how to make the claimed analogs or fragments, such that they will predictably potentiate cell death ignores the fact that that it is not necessary to be able to predict which analogs or fragments will potentiate cell death, as long as it would not take undue experimentation to test each of them.

Applicant argues that the references do not establish that every change, or even a majority of such changes, or even a large number of such changes would not be expected to effect the utility of the protein. Applicant argues that it is an evolutionary fact that only a very infrequent situation of mutations where any such mutations will actually affect the utility of a particular gene. Applicant argues

that the claims reads on mutations causing changes to only fewer than 2% of the total amino acids, and that such mutation can be made and readily tested. Applicant argues that such experimentation would be undue.

Applicant's arguments in paper of 05/06/05 have been considered but are found not to be persuasive for the following reasons:

It is noted that the specification does not disclose which fragment or which analog of SEQ ID NO:1 potentiates cell death, supra.

It is also noted that the claimed fragment does not have the limitation of changes of no more than 10 amino acid changes.

It is further noted that contrary to Applicant's arguments, the Examiner's reasons for rejection do not ignore the fact that it would be undue experimentation for one of skill in the art to screen for the claimed fragments or analogs. Rather, the Examiner stated that one would not know how to make the claimed analogs or fragments such that they would potentiate cell death, and it would be undue experimentation for one of skill in the art to screen for the claimed analogs or fragments (p.12, paragraph before last, of the previous Office action).

It could not be predicted which substitution, or insertion could be used, or which amino acid of the whole length amino acid sequence of SEQ ID NO:1, or which of 10 or less amino acids from the whole length of the polypeptide of SEQ ID NO:1 could be substituted, or deleted or inserted, such that the claimed fragment or analog still retain its potentiation of cell death, in view of the teaching in the art of the unpredictability of protein chemistry, as taught by Burgess et al,

Lazar et al, Tao et al and Gillies et al, all of record, which applies as well to DNA sequences encoding the proteins. This unpredictability of protein chemistry is further confirmed by Bowie et al (Science, 1990, 257 : 1306-1310). Bowie et al teach that an amino acid sequence encodes a message that determine the shape and function of a protein and that it is the ability of these proteins to fold into unique three-dimensional structures that allows them to function and carry out the instruction of the genome and further teaches that the problem of predicting protein structure from sequence data and in turn utilizing predicted structural determinations to ascertain functional aspects of the protein is extremely complex (col.1, p.1306). Bowie et al further teach that while it is known that many amino acid substitutions are possible in any given protein, the position within the protein's sequence where such amino acid substitution can be made with a reasonable expectation of maintaining function are limited. Certain positions in the sequence are critical to the three dimensional structure/function relationship and these regions can tolerate only conservative substitutions or no substitutions (col.2, p.1306).

Thus in view of such unpredictability of which amino acid from the entire length of SEQ ID NO:1 is to be changed, one would not know how to make the claimed fragment or analog. Although assays, with unpredictable results, could be screened, it would be undue experimentation for carrying such screening.

It is noted that screening assays do not enable the claimed invention because the court found in *Rochester v. Searle*, 358 F.3d 916, Fed Cir., 2004

that screening assays are not sufficient to enable an invention because they are merely a wish or plan for obtaining the claimed chemical invention.

Further, contrary to Applicant's assertion, although the procedure for testing potentiation of cell death is routine, the Examiner did not concede that the claimed changes could be readily made and tested. Rather, the Examiner stated that one would not know how to make the claimed analogs or fragments such that they would potentiate cell death, and it would be undue experimentation for one of skill in the art to screen for the claimed analogs or fragments (p.12, paragraph before last, of the previous Office action).

Further, although mutations by evolution only infrequently affect the utility of a particular gene, the claimed analogs or fragments are not drawn to product of mutations from evolution. Moreover, the specification does not disclose which mutations of SEQ ID NO:1 are by nature and would or would not affect the potentiation of cell death.

2) If Applicant could overcome the above 112, first paragraph, **claim 8 is still rejected under 112, first paragraph, for lack of enablement for "transformed host cells",** for reasons already of record in paper of 12/02/04.

Applicant argues that one only needs to disclose one way how to make a product in order to claim the product, and that this is not a product by process claim. Applicant argues that the fact that such host cells may be made by other methods does not require that the product claim be limited to the method disclosed.

Applicant argues that the fact that the examiner has cited references showing that there are problems hampering successful gene therapy, does not mean one could not get a vector into a cell in vivo. Applicant argues that the product claim does not require any particular method of use, and that only a single utility is necessary for a product claim. Applicant argues that the fact that it may be suitable for other allegedly non-enabled utilities is irrelevant.

Applicant's arguments in paper of 05/06/05 have been considered but are found not to be persuasive for the following reasons:

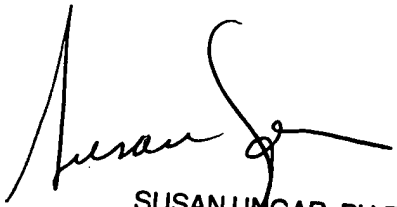
Claim 5 encompasses on a host cell obtained by transforming the cells with a vector of claim 5 in gene therapy, and is not limited to a host cell obtained by transforming the cells with a vector of claim 5 in vitro. In view that gene therapy is unpredictable, as taught by Miller et al, Deonarain, Verma and Crystal, all of record, one cannot predict that the claimed host cell could be obtained, wherein said host cells are transformed by a vector of claim 5 in gene therapy.

Concerning the utility of the claimed host cell, this issue is not germane here.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MINH-TAM DAVIS whose telephone number is 571-272-0830. The examiner can normally be reached on 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, JEFFREY SIEW can be reached on 571-272-0787. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



SUSAN UNGAR, PH.D
PRIMARY EXAMINER

MINH TAM DAVIS

July 22, 2005